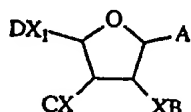


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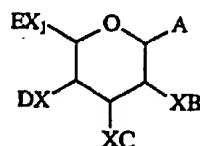
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(I)



(II)

(57) Abstract

The invention provides collections of orthogonally-protected monosaccharides as universal building blocks for the synthesis of glycoconjugates of non-carbohydrate molecules, neo-glycoconjugates and oligosaccharides. This orthogonal protection strategy allows for the specific deprotection of any substituent on the saccharide ring, and greatly facilitates targeted or library-focused carbohydrate-related syntheses. In particular, the invention provides a universal monosaccharide building block of General Formula (I) or General Formula (II) in which A is a leaving group; X is hydrogen, O, N or N₃; X₁ is hydrogen, -CH₂O-, -CH₂NH-, -CH₃, -CH₂N₃ or -COO-; and B, C, D and E are protecting groups that can be cleaved orthogonally, and in which B, C, D and E are absent when X is hydrogen or N₃, and E is absent when X₁ is hydrogen, CH₃ or N₃.